REMARKS

Claims 1-4, 7-12, and 15-58 are pending. Claims 1 has been objected to for an informality. Claims 1-4, 7-12, 15-23, and 36 have been rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 4,311,851 to Jung et al. (Jung) in view of U.S. Patent No. 4,894,188 to Takahashi et al. (Takahashi). Claims 24-35 and 37-58 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Takahashi in view of Jung.

Claim 1 has been amended to correct the typographical error for which Examiner had previously objected.

Examiner has maintained the rejection of Claims 1-4, 7-12, and 15-58 variously over Jung in view of Takahashi. In particular, Examiner alleges Jung to disclose the preparation of carboxylic acid esters with BF_3 alcohol complex catalysts prepared in using ratios of from 0.75 to 2 moles of boron trifluoride per an alcohol; in other words, the molar ratio of ROH:BF_3 is from 1.3:1 to 1:2.

However, Examiner concedes that Applicants' claimed ranges (i.e., the molar ratio ROH:BF_3 in the concentrated acid product is from about 2:1 to about 4:1) and those disclosed by Jung "do not overlap but are so close that one skilled in the art would have expected to have the similar reaction condition in the absence of an unexpected result; a prima facie case of obviousness may be overcome by a showing of the unexpected result based on the side-by-side comparison data between the prior art and the current invention"(See Page 6, first paragraph of the above referenced Office Action, mailed February 7, 2005).

The conversion of an olefin to an ester is an acid catalyzed reaction, the stronger the acid, the more facile the reaction. As Applicants disclose, the BF_3-ROH complex disclosed in the art is a stronger acid than is the BF_3-2ROH complex recited by Applicants (i.e., "[b]ecause the acid composition contains primarily BF_3-2ROH, rather than BF_3-ROH, the invention utilizes a relatively weaker acid to convert olefin or ethers to the desired ester products. The strength of

the acid depends upon the relative molar concentration ratio of alcohol:BF_3. The greater the molar concentration ratio the weaker the acid" (Page 4, lines 10-14). The Hammett acidity vaules for BF_3 complexes support the notion that the BH_3-ROH complex is a stronger acid than the BF_3-2ROH complex:

MeOH/BF_3mole/mole	Hammett acidityFunction (Ho)
2.10/1	-4.2
1.42/1	-6.6
1.75/1	-7.1
1/1	-8.0

As the data indicates, BF_3-MeOH is nearly 1000 times more acidic than BF_3-2MeOH. Accordingly, Applicants invention runs against the teachings in the art, such that Applicants have obtained an unexpected benefit using their recited acid catalyst (i.e., the molar ratio ROH:BF_3 in the concentrated acid product is from about 2:1 to about 4:1) in place of the more active catalyst having a 1:1 mole ratio of BF_3 and alcohol. In addition, by utilizing this less acidic, yet stable catalyst, Applicants have improved the process of Jung in the Applicants' recited process does not require the highly corrosive uncomplexed BF_3 to be distilled from the reaction products and then recycled to form the active BF_3-ROH as is disclosed by Jung (see Page 2, lines 13-16 of the Application as filed). As Applicants note, this is a benefit for many reasons including the special operational handling and specialized process units required to distill BF_3, which result in a highly inefficient process (see Page 2, lines 20-23).

For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness.. In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). Establishing a prima facie case of obviousness requires that all elements of the invention be disclosed in the prior art. In Re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

However, by Examiner's own admission, all the elements of the invention (i.e., the molar ratio ROH:BF_3 in the concentrated acid product is from about 2:1 to about 4:1) art not disclosed in the prior art. Accordingly, Examiner has failed to establish a prima facie case of obviousness.

Even assuming that all elements of an invention are disclosed in the prior art, an Examiner cannot establish obviousness by locating references that describe various aspects of a patent applicant's invention without also providing evidence of the motivating force which would have compelled one skilled in the art to do what the patent applicant has done. *Ex parte Levengood*, 28 U.S.P.Q.2d 1300 (Bd. Pat. App. Int. 1993). The references, when viewed by themselves and not in retrospect, must suggest the invention. *In Re Skoll*, 187 U.S.P.Q. 481 (C.C.P.A. 1975).

Jung however, fails to provide evidence of the motivating force which would have compelled one skilled in the art to do what the patent applicant has done. In particular, Jung discloses:

> "The selection of the appropriate catalyst complex is an essential feature of the invention. As pointed out previously, the catalyst complex used in the instant invention contains equal molar amounts of BF_3 and an alcohol. These catalysts are stable complexes having specific physical properties. They exist as liquids at room temperature and therefore can be conveniently used as the reaction solvent.
>
> While it is understood that the 1:1 molar ratio catalyst is the active constituent in the instant invention, the catalyst may be prepared using ratios of from about 0.75 to 10 moles of BF_3 for each mole of the alcohol, preferably from 0.75 to 2 moles per mole. It will be understood that, when less than one mole of the BF3 is utilized with, say, methanol, the catalyst is a mixture of BF_3CH_3OH and BF_32CH_3OH. This latter compound is also a stable complex; however, in contrast to the 1:1 molar ratio catalyst, it is non-selective to the desired product and of relatively low activity. Accordingly, a substantial amount of such complex is undesirable.
>
> On the other hand, where the molar ratio is in excess of 1:1, the 1:1 catalyst complex (e.g., BF_3CH_3OH) is in admixture with uncomplexed BF_3 Since excess BF_3 is not catalytically active for the desired ester, sizeable excesses are of little advantage." (Col. 4, lines 29-48, emphasis added)

Thus not only are all of Applicants' recited limitations not present in art, but also the art specifically teaches away from Applicants' recited invention. As such, no reasonable conclusion may be drawn that a prima facie case of obviousness has been made.

Examiner also contends that even though the ranges do not overlap, the ranges "are so close that one skilled in the art would have expected to have the similar reaction condition in the absence of an unexpected result." In other words, Examiner has rejected Applicants' presently claimed invention under Section 103 as being obvious to try.

It is well established that a rejection based on being "obvious to try" does not comport with Section 103. For example, the CAFC has held:

> "There is usually an element of "obvious to try" in any research endeavor, since such research is not undertaken with complete blindness but with some semblance of a chance of success. Therefore, "obvious to try" is not a valid test of patentability."

(In re Dow *Chemical* Co. (CAFC 1988) 837 F.2d 469, 5 PQ2d 1529, cited with approval in In re Sligo Research (CAFC 1995 Unpub. Dec.) [36 PQ2d 13801; In *re Mercier* (CCPA 1975) 515 F.2d 1161,185 USPQ 774; Hybritech, Inc. v. *Monoclonal* Antibodies, Inc. (CAFC 1986) 802 F.2d 1367,231 USPQ 81; EX parte O/c/ (BPAI 1985) 229 USPQ 196; In *re Geiger* (CAFC 1987) 815 F.2d 686,2 PQ2d 1276. The same holds true for "motivated to use." In re Jones (CAFC 1992) 958 F.2d 347,21 PQ2d 1941. "Patentability determinations based on thereon as a test are contrary to statute." In re *Antonie* (CCPA 1977) 559 F.2d 618, 195 USPQ 6; In re Goodwin et al. (CCPA 1978) 576 F.2d 375, 198 USPQ 1; In re *Tomlhson et* a/. (CCPA 1966) 363 F.2d 928,150 USPQ 623.

In addition, it has been held that:

"Obviousness of a process must be predicated on something more than it would be obvious "to try" the particular class of solvent recited in the claims or the possibility it will be considered in the future, having been neglected in the past."

(See *Exparte* Argabright et al. (POBA 1967) 161 USPQ 703.)

Directly on point to Applicants' presently claimed invention is In re Dien, wherein it was held:

> "a rejection based on the opinion of the examiner that it would be "obvious to try" the chemical used in the claimed process which imparted novelty to the process does not meet the requirement of 35 USC §103 that the issue of obviousness be based on the claimed subject matter as a whole"

(In re *Dien* (CCPA 1967) 371 F,2d 886, 152 USPQ 550; In re *Wiggins* (CCPA 1968) 397 F.2d 356,158 USPQ 199; In *re Yates* (CCPA 1981) 663 F.2d 1054,211 USPQ 1149.)

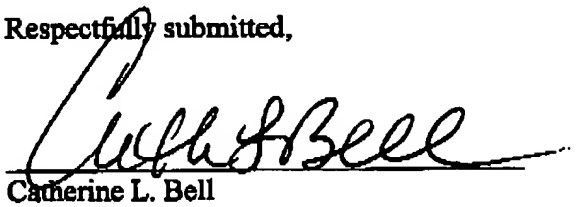
"There must be a suggestion or teaching that the claimed novel form of the prior art compound could or should be prepared." In *re Cofer* (CCPA 1966) 354 F.2d 664, 148 USPQ 268, cited with approval in the unpublished decision of the CAFC in *Bristol-Myers* Co. v, U.S. *ITC* (CAFC 1989) [I5 PQ2d 12581, and a "reasonable expectation of success." *Frifsch* v. *Lin* (BPAI 1991) 21 PQ2d 1739. Arguing that mere routine experimentation was involved overlooks the second sentence of 35 USC §103. In re Saether(CCPA 1974) 492 F.2d 849,181 USPQ 36.

As is well established, "the issue is whether the experimentation is within the teachings of the prior art" (see In re Waymouth *et al.* (CCPA 1974) 499 F.2d 1273, 182 USPQ 290). However, in the present case, Examiner clearly concedes that all of the limitations of Applicants' presently claimed invention are not disclosed in the prior art. It has also been held that the fact that the prior art does not lead one skilled in the art to expect the process used to produce the claimed product would fail does not establish obviousness. In *re* Dow Chemical Co. (CAFC 1988) 837 F.2d 469, 5 PQ2d 1529. Even more, in the present case, the art specifically leads one skilled in the art to expect Applicants' presently claimed invention to fail (i.e., a substantial amount of such complex (BF32ROH) is undesirable).

Neither Jung nor Takahashi disclose an acid composition comprising BF_3·ROH wherein the molar ratio ROH:BF3 is from about 2:1 to about 4:1. Accordingly all elements of Applicants' presently claimed invention are not disclosed in the references cited. Since all the claim limitations are not disclose in the cited references, a *prima facie* case of obviousness cannot be made. Therefore, Jung and Takahashi, either alone or in combination, do not render Applicants presently claimed invention obvious.

It is believed that the foregoing amendments and remarks fully comply with the Office Action and that the claims herein should now be allowable to Applicants. Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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